

REMARKS

In response to the above-identified Office Action, Applicants amend the application and seek reconsideration thereof. In this response, Applicants amend Claims 1, 7, 13, and 20.

Applicants amend Claims 7 and 20 merely to more clearly point out the subject matter sought to be claimed. Applicants do not cancel any claims or add any new claims. Accordingly, Claims 1-25 are pending.

I. Claims Rejected Under 35 U.S.C. § 103(a)

Claims 1-3, 6, 7, and 9-12 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,475,906 issued to Lee (“Lee”) in view of U.S. Application Publication No. 2003/0066545A1 applied for by Chang et al (“Chang”). Applicants respectfully traverse the rejection.

To establish a *prima facie* case of obviousness, the Examiner must show the cited references, combined, teach or suggest each of the elements of a claim. Amended Claim 1 recites a method comprising, among others, the steps of:

“(a) forming a semiconductor substrate structure including a substrate, a plurality of conductive patterns, an etch stop layer, an inter-layer insulation layer, a nitride layer on top of the inter-layer insulation layer for forming a hard mask, an anti-reflective coating (ARC) layer and a photoresist pattern;” and

“(d) etching the inter-layer insulation layer disposed between the conductive patterns by using the hard mask as a second etch mask to form a contact hole exposing the etch stop layer.”

Applicants submit that neither Lee nor Chang teaches or suggest the nitride layer on top of the inter-layer insulation layer for forming a hard mask as claimed.

Lee at most discloses a nitride layer 29 as part of the gate electrode 30, and a capping nitride layer 34 covering the surfaces of the gate 30 and the gate oxide. However, neither the nitride layer 29 nor the capping nitride layer 34 is located on top of the inter-layer dielectric layer 40. On the contrary, both of the nitride layers 29 and 34 are positioned below the inter-layer dielectric layer 40.

An underlying layer cannot serve as an etch mask. Thus, the inter-layer dielectric layer 40 cannot possibly be etched using either of the nitride layers 29 and 34 as an etch mask, as recited in step (d) of Claim 1. Thus, Lee does not teach or suggest the nitride layer as claimed.

Chang does not cure the defect of Lee. The Examiner relies on Chang for teaching the in situ condition recited in Claim 1. However, Chang also fails to disclose the nitride layer on top of the inter-layer insulation layer for forming a hard mask as claimed. Chang at most discloses a method and system for reducing acidic contamination during a semiconductor process. There is nothing in Chang that discloses any specific semiconductor structure. Thus, Lee in view of Chang does not teach or suggest each of the elements of Claim 1.

Claims 2, 3, 6, 7, and 9-12 depend from Claim 1 and incorporate the limitation thereof. Thus, for at least the reasons mentioned above in regard to Claim 1, Lee in view of Chang does not teach or suggest each of the elements these claims. Accordingly, reconsideration and withdrawal of the objection of Claims 1-3, 6, 7, and 9-12 are requested.

Claims 13-16, 19-20, and 22-25 stand rejected under 35 U.S.C. § 103(a) as being obvious over Lee in view of Chang. Applicants respectfully traverse the rejection.

Claim 13 recites “a nitride layer on top of the inter-layer insulation layer for forming a hard mask” and “etching the inter-layer insulation layer … by using the hard mask as a second etch mask to form a contact hole exposing the etch stop layer.” Thus, for at least reasons mentioned above in regard to Claim 1, Lee in view of Chang does not teach or suggest each of the elements Claim 13 and its dependent claims 14-16, 19-20, and 22-25. Accordingly, reconsideration and withdrawal of the objection of Claims 13-16, 19-20, and 22-25 are requested.

II. Allowable Subject Matter

Applicants note with appreciation that Claims 4, 5, 8, 17, 18, and 21 are allowable if rewritten in an independent form. Applicants submit that the amendment to Claims 1 and 13 have placed these claims and their dependent claims in condition for allowance. Accordingly, reconsideration and withdrawal of the objection Claims 4, 5, 8, 17, 18, and 21 are requested.

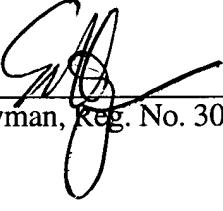
CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666.

Respectfully submitted,

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Erin Flynn

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